PHILADELPHIA, APRIL 24, 1880.

ORIGINAL LECTURES.

ON POST-MORTEM EXAMINATIONS OF THE BRAIN.

Delivered before the Philadelphia County Medical Society, February 11, 1880,

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GENTLEMEN,—With Ecker, I believe that the great problem of an organology of the cerebral surface rests in great part in the hands of physicians. The functions of the ganglia and tracts of the interior of the cerebrum, and of the other subdivisions of the brain, are also to be largely settled by them through post-mortem investigations. For this reason, I trust my subject this evening may prove of interest. In addition, as strictly practical men, on the principle that what is worth doing is worth doing well, the best methods of making cerebral autopsies deserve our attention. Special morbid conditions will only be incidentally referred to, my object being to discuss methods and not lesions. I am fortunate in having the opportunity to exhibit to you numerous specimens, and, with the assistance of Dr. Leffmann, will be able to illustrate some of the facts presented by projections on the screen.

To prevent mutilation of the hair the incision through the scalp should be made from within outwards. The temporal muscles should be left behind, as a few stitches through them will assist subsequently in holding the skull-cap in position. The bones should be sawed not quite through, finishing with chisel, mallet, and hook, thus avoiding injury to the meninges and brain. Sometimes it may be necessary to dissect the dura from the calvaria, or to remove the latter and the convex portion of the membrane together. As a rule, the best procedure is to cut through the dura mater along the track of the saw, and afterwards, separating the falx from the crista galli, to detach the convexity of the membrane from the brain as far back as the tentorium. Proceeding from before backwards, the various nerves, vessels, etc., can then be severed one after the other, and when the tentorium is reached, a single incision through it, on each side, is all that is necessary. Remaining nerves and vessels should now be divided with the knife, or with fine scissors with long shanks, and the spinal cord should be cut across as low down as possible. During the whole process the brain should be thoroughly supported on all sides.

Griesinger recommends in some cases, especially in children, sawing through bone and brain together; but this is a method not often applicable.

It may be advisable in some instances, after removing the calvaria and convex dura, to examine the brain while in position. To do this, its upper surface should be kept as nearly level as possible, and some of the incisions which I shall hereafter describe should be used to open the ventricles. A syringe with a long nozzle can be employed to withdraw fluid from the ventricles, a procedure suggested by Dr. Harrison Allen, in a review of "Delafield's Handbook" (*American Journal of the Medical Sciences*, July, 1873). In order to determine the amount of fluid within the skull, a vessel should be constantly kept in a position to catch all that escapes; this to be afterwards added to the quantity found in the ventricles and floor of the skull.

An examination of the sawn edges of the bones, and of the inner surface and floor of the skull, should never be neglected, the foramen magnum and the sella Turcica receiving especial attention. The pituitary body can be dissected out of the latter after the removal of the brain, or, with careful handling, it can be taken out without breaking its connections. It is not infrequently important to examine the Casserian ganglion and the portions of the cranial nerves remaining behind in the skull grooves and cavities.

The convex portion of the dura mater has been in part inspected before the removal of the brain, and the investigation should now be carefully completed.

In the present state of our knowledge it is better to follow Rokitansky, Rindfleisch, Huguenin, and other good authorities, in not considering the arachnoid, for pathological purposes, at least, as a distinct membrane.

Both surfaces of the pia mater should be examined. Precision and fulness should be studied in describing the condition of vessels, both with reference to their walls and to their contents. You must depend

largely upon your anatomical knowledge in determining whether vessels are arteries or veins. The vessels of the circle of Willis and their branches should be examined closely for embolisms, aneurismal dilatations, and evidences of degeneration. An occluded artery can often be made out by its attenuated, cord-like look beyond the seat of closure.

The state both of tissues and vessels with reference to blood must be thoughtfully considered. An apparent hyperæmia has often no real ante-mortem significance. Fulness of vessels situated posteriorly is often simply the result of position, what is known as hypostatic congestion.

I will next proceed in greater detail with the consideration of the methods of examining the convolutions and the ganglia and tracts of the cerebrum, this being a portion of the subject about which the mass of the profession seems to have the least exact knowledge.

I not infrequently meet, in journals and text-books, with records of autopsies which contain descriptions of lesions occurring in such indefinite localities as anterior, middle, or posterior lobes. Such vagueness is certainly no longer excusable. The works of Ecker, Charcot, Ferrier, Richet, and others, have made cerebral landmarks so plain that all that will may see and know.

After the examination of the pia mater and its vessels, the membrane should be removed, unless, for some special reason, it is considered desirable to leave it in position. The convolutions, however, cannot be thoroughly examined unless they are stripped. The removal of the pia mater can be done under water, but, as Ecker remarks, the stay of the brain in water must be limited, as it otherwise becomes too soft by imbibition. With a little care and patience the operation can usually be readily accomplished out of water. With a pair of fine forceps in each hand, the membrane and its vessels can be pulled out of any convenient sulcus, and adjoining crests and depressions uncovered. If a large surface be held together, the finger can sometimes be substituted with advantage for the forceps. Watchfulness should be exercised in regard to tearing away fragments of cortical substance.

Certain general conditions likely to occur should not be overlooked. Sometimes large areas of the surface are flattened and changed in color, sometimes the convolutions are narrower than they should be; the fissures and sulci sometimes have a greater or less depth than is normal; hemorrhages, exudations, or abnormal growths may be present.

In pathological cases it will not always be possible to follow any fixed routine in examining the convolutions, the discovery of lesions compelling us to modify and change our methods; but, whenever feasible, some general system, like that recommended by Ecker in the appendix to his monograph, should be pursued, proceeding from the more to the less important fissures, convolutions, and regions. The physician acquainted with the brain only from books may at first find that, with the exception of a few of the great furrows and folds, the convoluted surface before him seems a tantalizing labyrinth. He errs in expecting that regularity which is seen only in schemes and diagrams. Convolutions change more or less after birth; no two adult brains have exactly the same surfaces. Secondary and tertiary fissures and convolutions vary greatly, and even the primary often present exceptional appearances. The great Sylvian cleft is easy of recognition. The central fissure, or fissure of Rolando, is scarcely ever hard to pick out. It is usually a deep, unbridged furrow, about three inches in length, running from above downwards and a little forwards, nearly midway of the hemispheres, beginning close to the longitudinal fissure and extending nearly to the Sylvian. I have never seen it bridged, although a few examples of this occurrence are on record. Not infrequently it passes into the longitudinal fissure, sometimes with and sometimes without bridging fibres below the surface-level. Rarely, indeed, does it run into the Sylvian fissure; and yet I have seen this once in a white brain, a note of which was made for me to the Philadelphia Academy of Natural Sciences, by Professor A. J. Parker, of the University of Pennsylvania. Professor Parker has also observed this anomaly in another case; Turner has recorded a third instance (*The Convolutions of the Human Brain, topographically considered*, p. 10, Edinburgh, 1866); and Professor Macalister has made a fourth similar observation (*Proc. Dublin Univ. Biol. Assoc.*, vol. i. No. 2, p. 25, quoted by John C. Galton in *Brain*, October, 1878, p. 384). These facts should guard you against confusion from occasional de-

viations, and also stimulate you to be on the alert to make additions to morphology. A fissure may appear to open completely into another, a bridge being revealed by pulling aside overlapping edges. The fissure most likely to be mistaken for that of Rolando is, I think, the vertical frontal, which is sometimes long and deep.

The first frontal and the interparietal fissure, which have bold, continuous outlines in Ecker's plates, are often bridged at one or more points, but these broken fissures should be regarded as one. The parieto-occipital, calcarine, and parallel, or first temporal, fissures are nearly always deep, uninterrupted trenches. The latter usually curves upwards in the parietal lobe, not far behind the end of the Sylvian fissure. Recently, however, I saw the brain of a white man in which the end of the parallel fissure, which was deep and absolutely continuous, extended back of the transverse occipital and to within half an inch of the longitudinal fissure. Such observations have an important bearing upon the location of lesions with reference to the position of cortical centres. In a case like this, for instance, the psycho-sensory centres of vision would be located in the angular gyrus, and, at the same time, in the occipital lobe, instead of in the parieto-temporal region, their usual position. Ferrier placed the visual centres in the angular gyrus; Munk in the occipital lobe; Luciani and Tamburini concluded that they were situated in both (*Studii clinici sui Centri sensori corticali, Communicazione preventiva dei Professori Luigi Luciani e Augusto Tamburini.* Milan, 1879, quoted in *Brain*, Part VIII., January, 1880). It is not improbable that, when the psycho-sensory centres of vision have been found in the occipital lobe, the angular gyrus has, in whole or in part, been situated in the same region.

In regard to post-mortem examinations, the practical point is, that whenever you have marked deviations or variations of fissures or convolutions, these should be noted with the descriptions of the lesions. By thus conjoining morphological with pathological study, many apparently contradictory facts can be explained.

I will say a few words only about special lobes and convolutions. The island of Reil cannot be studied until the Sylvian fissure is drawn well apart, although it is not as completely covered in the negro as in the white brain, a fact to which my attention was first directed by Dr. Parker. It should be examined from the base, although a glimpse of it can be had from the side by pulling asunder the operculum and upper part of the temporal lobe. In exploring the third frontal convolution, great care should be exercised in making out its exact boundaries. The ascending convolutions, on each side of Rolando's fissure, are usually well defined. It is important to inspect closely the occipito-temporal convolutions, for here, it is supposed, are located those centres of sensation on which pathology has as yet thrown so little light.

Let us next turn to the interior of the cerebrum. Slicing off the hemispheres, or cutting out blocks of brain substance, down to the lateral ventricle, is a plan not to be recommended, as autopsies should be made, whenever possible, so as to allow the brain to be drawn together again on their completion. The lateral ventricle can be entered by a perpendicular incision into the corpus callosum on each side of its raphé, as advised by Virchow. I prefer, however, to make an incision into the median face of the hemisphere, downwards and slightly outwards, along the lower edge of the calloso-marginal fissure. The middle portion of the brain will remain more firmly together as you proceed if some of the hemispheric matter is thus left in connection with the corpus callosum. Dr. Allen, in the review referred to, recommends the incision for opening the lateral ventricle to be made directly downwards from the vertex of the brain, about six lines to the outer side of the great longitudinal fissure; but the convolutions will be greatly disarranged by such a section, and the examination of interior portions will not be as readily carried out as after the other two methods which I have given. The body of the ventricle and the surface of the great ganglia being brought into view, the anterior and posterior horns should next be fully exposed by further incisions, and everything in sight thoroughly examined. The middle horn can be opened out or not, according to the wishes or objects of the operator. The ventricle of the opposite side should now be entered and its contents investigated. The condition of the septum lucidum should be noted, and after this a small sharp knife should be introduced into the

foramen of Monro, and the septum lucidum and corpus callosum should be cut through upwards, the portions anterior and posterior to the section being turned forwards and backwards, respectively. The velum interpositum and its choroid plexuses should be lifted up, and the third ventricle, pineal gland, and corpora quadrigemina examined.

Before taking up the next step—the examination of centrum ovale, ganglia, and capsules—it will be well to recall a few anatomical points. The præ-frontal and occipital regions of the brain present only convolutions and white matter, but between these is a most important and somewhat complicated region. What is commonly regarded as the corpus striatum is the pear-shaped, anterior gray surface mass of the lateral ventricle. Strictly, however, this is the nucleus caudatus or intraventricular portion of the corpus striatum; it has comparatively little depth, and is sometimes spoken of as the corpus striatum proper. Even this part of the ganglion does not terminate, as many suppose, at the posterior border of the optic thalamus, but the tail-like prolongation curves downwards into the middle or inferior horn, encircling the crus cerebri and parts within and above with a narrow gray band called the surcingle, which runs as far forwards below as the point where the corpus striatum begins above, terminating in the amygdala, a deposit of gray matter which is continuous with the convolutions of the base immediately behind the Sylvian fissure. Within and posterior to the intraventricular striate body is the optic thalamus, which has a much greater depth. Below both caudate nucleus and optic thalamus, and separated from them, except at the anterior end of the former, by white matter, is another gray ganglion,—the lenticular nucleus. By many, caudate and lenticular nuclei together are looked upon as constituting one great ganglionic mass,—the corpus striatum; but whatever morphological view may be taken of these bodies, it is best in describing lesions to designate them separately. To use the figure of Charcot, a good strategic chart cannot be too complete. The lenticular nucleus itself consists of three segments with a little white substance between them, and, when possible, the precise position of lesions, even with reference to these subdivisions, should be indicated. The white mass to which I have referred as between the caudate nucleus and optic thalamus above and to the inside, and the lenticular nucleus below and without, is the internal capsule, a prolongation of a portion of the crus cerebri. Outside of the lenticular nucleus is another narrower white bundle,—the external capsule; beyond this, a gray band,—the claustrum; still farther outwards, some unnamed white fibres; and, finally, gray cortical matter. At some points, also, it will follow, from the description which I have given, that near to the convolutions, but separated from them by white strands, the gray loop, called the surcingle, will appear. Into lengthier anatomical details I cannot go, but for them must refer you to the books and the dissecting-room.

What I wish particularly to impress, in connection with these anatomical facts, is that all the parts described can be brought into view for study and investigation by perpendicular incisions across the brain,—in other words, by vertico-transverse sections; and such sections can therefore be usefully employed in our post-mortem examinations. M. Pitres describes a series of six vertical transverse sections, which should be studied in order that you may become familiar with normal appearances, and which indicate good positions for your first set of incisions in autopsies. The first is made through the præ-frontal region, the second through the bases of the three frontal convolutions, the third through the ascending frontal convolution, the fourth through the ascending parietal convolution, the fifth through the superior and inferior parietal lobules, and the sixth through the occipital lobe. (Ferrier's "Localization of Cerebral Disease," p. 49.) Your incisions should be made in each hemisphere, from within outwards nearly to the convolutions. Of course, in cutting from within, you cannot so readily use the convolution as a guide; but sections about an inch apart will be practically correct. If by any of them a lesion should be revealed, note its exact limitations. Ascertain whether it is continuous to the next primary section, anterior or posterior, and, if not, repeat incisions until its precise extent is made out.

Instead of vertico-transverse you may sometimes employ vertico-longitudinal sections. In this method, beginning at the cerebral peduncles, smooth incisions long and deep enough to expose all the parts to

within a few lines of the convolutions of the base should be carried through both optic thalamus and corpus striatum and out into the hemispheres, a few extra sections being made in the white matter above the level of the ventricles.

It may sometimes be desirable to examine the interior of the cerebrum from the base, which can be readily done, particularly if you have a fair knowledge of the relations of the fissures and convolutions of the surface to internal eminences and cavities. The great transverse fissure, or fissure of Bichat, will serve as a place of departure. By cutting from it along the line of the calcarine fissure, the posterior cornu can be laid open, the middle horn being exposed by an incision along the hippocampal fissure. The crus cerebri on each side should next be divided, the pons, medulla oblongata, and cerebellum being removed as a separate specimen. The body of the ventricle and the anterior horn are now readily entered, and transverse incisions into the hemisphere can be made. Care must be taken not to destroy the central parts of the base.

Mynert has a method of examining the brain which is followed by many specialists in mental disease, a description of which I will give you from Orth's "Compend of Diagnosis in Pathological Anatomy." The chief end to be gained is the determination of the weight of each of the three great portions of the brain, taken separately. These three portions are (1) the brain-covering, which is composed of the cerebral lobes, olfactory nerves, corpus callosum, fornix, and septum lucidum; (2) the brain-stem, consisting of all parts below those mentioned, except the cerebellum; and (3) the cerebellum. "The pia mater is not removed, but the brain being placed with its base upwards, the islands of Reil are dissected away from their attachments so freely as to allow the three fissures which bound each of them to be clearly seen. The pia over the great transverse fissure is then detached laterally and behind, so that on raising the medulla oblongata, pons, and cerebellum, the descending cornu of the lateral ventricle may be directly exposed. The anterior portion of the parietal lobe is next grasped, drawn somewhat backwards, and its connection with the stem cut through by keeping close to the posterior furrow of the island of Reil externally, and to the outer wall of the descending cornu internally. The island is then separated from its base by holding the knife nearly horizontal and cutting through the outer limiting furrow, care being taken to keep close to the outer angle of the lateral ventricle formed by the corpus callosum and the great cerebral ganglia, which may readily be seen by lifting the cerebral stem. These cuts having been made on both sides, the knife is passed into the longitudinal fissure, and a horizontal section (parallel with the orbital surface of the frontal lobes, and about three centimetres deep) is made through the depression just in front of the anterior perforated space, then following the anterior furrow of the island of Reil, with a slight curve concave outwards until the cut previously made through the outer furrow is met. The stem and cerebellum are now raised and made tense, the pillars of the fornix and the septum lucidum are cut through from below, just in front of the anterior commissure, and finally the brain stem is completely detached by separating from below the remaining adhesion in front of the corpus striatum. This portion is readily separated from the cerebellum by cutting through the several processes connecting the two."

The cerebellum, pons varolii, and medulla oblongata can be examined either while still in connection with the higher brain, or after they have been removed by cutting across the crura cerebri. If any superficial lesions be present on the upper surface of the cerebellum, their exact location with reference to the hemispheres and to the superior vermiform process should be noted. This process, the upper part of the median lobe, is of more importance since Nothnagel (*Berl. Klin. Wochen.*, April 15, 1878) has shown that it is the one region of the cerebellum about which we have definite clinico-pathological information, disturbances of coordination occurring when it is diseased. Continuing the examination, an incision should be carried from above downwards through the middle of the median lobe, taking care not to wound the floor of the fourth ventricle. In describing lesions, reference should be made to known anatomical subdivisions,—in the median lobe, to nodule, uvula, pyramid, etc.; in the hemispheres, to flocculus, tonsil, digastric, slender, and inferior posterior lobes. It is too much the habit to speak simply of

lesions in the right, left, or median lobe. After the perpendicular median section, further incisions can be made outwards in the direction of the middle cerebellar peduncle, or the cuts, for special reasons, may be either longitudinal or transverse. The cerebellum can be examined alone, by first carefully separating its under surface from the medulla oblongata and pons, and then cutting across one after the other the inferior, middle, and superior peduncles. Internally, it is necessary to localize lesions of the cerebellum with reference to its central stem of white matter and its gray cortical laminæ, particular attention being paid to the corpus dentatum, the only ganglion of the cerebellum, which lies a little within the centre of the stem of white matter.

The floor of the fourth ventricle, which is exposed by the median section through the cerebellum, or which can be studied after the separation of the cerebellum from the pons and medulla, should always be minutely explored, for here are often found most interesting lesions, both primary and secondary, in cases of cerebral, spinal, and cerebro-spinal disease. Superficial blood-clots, extravasations of blood into the brain substance, areas of true congestion, foci of softening, exudations and growths, and sclerotic patches, are some of the forms of lesions which I have had the opportunity of studying macroscopically in this region. Descriptions of lesions here should be definite and accurate; and they can be easily made so by taking for points of departure such readily recognizable landmarks as the median furrow, the medullary striæ, or lineæ transversæ, the locus cæruleus above, and the ala cinerea below. The distance in lines or millimetres of lesions from such landmarks should be mentioned.

NOTE.—In addition to the references in the text, I would call attention to the following works, which have been consulted in the preparation of this lecture:

Ecker: The Cerebral Convolutions of Man. Translated by R. T. Edes, M.D. New York, D. Appleton & Co., 1873.

Virchow: Post-Mortem Examinations. Philadelphia, Lindsay & Blakiston, 1877.

Charcot: Lectures on Localization in Diseases of the Brain. Edited by Bourneville. Translated by E. P. Fowler, M.D. New York, William Wood & Co., 1878.

Richet: Physiology and Histology of the Cerebral Convolutions. Translated by E. P. Fowler, M.D. New York, William Wood & Co., 1879.

Delafield: A Hand-Book of Post-Mortem Examinations and Morbid Anatomy. New York, Wm. Wood & Co., 1872.

Orth: A Compend of Diagnosis in Pathological Anatomy, with Directions for making Post-Mortem Examinations. Translated by Shattuck & Sabine, and revised by Fitz. New York, Hurd & Houghton, 1878.

Holden: Manual of the Dissection of the Human Body. Philadelphia, Lindsay & Blakiston, 1879.

ORIGINAL COMMUNICATIONS.

NOTES ON ANÆSTHETICS—CHLORIDE AND BROMIDE OF ETHYL.

BY H. C. WOOD, M.D.

THE papers of Drs. Turnbull and Levis upon the bromide of ethyl have attracted so much attention that I consider no apology necessary for laying before the profession certain experiments which I have recently made with it and one or two other anæsthetic liquids, although the study is by no means an exhaustive one.

The first substance to be spoken of is the *chloride of ethyl*. This boils at so low a temperature as to unfit it for use in a pure state. To overcome this difficulty, Dr. Greene, Demonstrator of Chemistry in the Medical Department of the University, suggested the addition of alcohol to the chloride, and prepared for me such a mixture. The vapor of this, when inhaled by myself, produced at once cerebral symptoms similar to those of the beginnings of etherization, but no attempt has been made to produce complete anæsthesia with it upon man. The following experiment shows, however, that the chloride offers little promise of being a serviceable anæsthetic:

Exp. I.—A Large Dog.

Time. M. Sec.	Art. Press. Mm.	Remarks.
0.	65–70	Chloride of ethyl and alcohol.
0.45		Fluidrachm.
1.30	65–90	
2.	65–70	Fluidrachm.
3.	70–80	Dog quiet, breathing deep and slow; pupils widely dilated, conjunctival reflex diminished.
4.	70–80	
4.15	75–85	Dog as at last entry.
6.	70–80	Fluidrachm.
6.30	75–85	Fluidrachm.
7.	90–95	
8.		Three fluidrachms.
9.	Clot.	
13.		Dog has not been anæsthetized at all.

There are one or two remarks to be made concerning this experiment. In this and all the experiments hereafter detailed the inhalation was practised by fitting a tin tube, with cloth, etc., closely over the snout of the animal, and filling with a fine sponge this tube in such a way

that the animal was forced to breathe in and out through the sponge upon which the anæsthetic was placed. The chloride is, however, so volatile that it evidently should be put in a closed receptacle, like a bladder, in order to get its full effects. Although the method of administration was not well adapted for the particular substance used, the experiment indicates that the chloride acts as an arterial stimulant, but is feebly if at all anæsthetic. If the chloride had very marked anæsthetic power a mixture of it with ether might be of service, the very volatile chloride producing anæsthesia at once, and the ether maintaining the insensibility.

My next experiments were upon the *bromide of ethyl*. All of the specimens used were manufactured by Wyeth & Brother, of this city.

The important physiological difference between chloroform and ether is in their action upon the heart, and my experiments have been chiefly directed to determining whether the bromide, like chloroform, is depressant to the arterial pressure, and therefore probably dangerous as an anæsthetic, or whether it shares the stimulant powers and the safety of ether. As an anæsthetic I have found it fully as prompt as chloroform, but more evanescent in its influence.

Exp. II.

Time. M. Sec.	Art. Press. Mm.	Remarks.
0.	50–90	Pressure has been steady for some minutes.
1.		One and a half fluidrachms.
2.	100–120	Dog struggling violently.
2.30	50–180	Dog very quiet, with exceedingly deep and forcible inspirations.
2.40	90–110	Dog quiet.
4.		One and a half fluidrachms.
9.	60–100	Dog profoundly anæsthetized.
10.		One and a half fluidrachms.
11.	40–50	Respirations very much lessened in depth, also slow.

The dog was allowed to recover consciousness, and then one and a half fluidrachms were injected into the jugular vein. The heart stopped at once.

Exp. III.—A Moderate-Sized Dog.

Time. M. Sec.	Art. Press. Mm.	Remarks.
0.	75– 95	Pressure steady for some minutes.
0.30		Two fluidrachms of the bromide.
0.45	80–110	
1.	60– 90	Profoundly anæsthetized.
2.	50– 60	
3.	30– 35	Breathing very much affected. Sponge removed.
3.30	40– 45	
4.30	55– 60	
6.	75– 80	
7.	100–110	Dog perfectly conscious.
11.	90–100	Two fluidrachms of ether.
14.	75– 95	Conjunctival reflex almost abolished. Ether was given freely, at short intervals, for the next *ten minutes*, and the dog was kept profoundly anæsthetized.
25.	75– 90	Two fluidrachms of ether.
26.30	70– 80	Respirations very much suppressed.
27.	80– 90	No respiration occurred after this.
27.50	60– 70	

Exp. IV.

Time. M. Sec.	Art. Press. Mm.	Remarks.
0.	50–110	Dog breathing very deeply; pressure has been as marked for some minutes.
0.15		Two fluidrachms of bromide of ethyl.
1.	60–150	Dog struggling very much.
2.	70–100	
2.30	70–100	Profoundly anæsthetized.
3.	50– 90	
3.40	60– 90	Fluidrachm of the bromide.
4.30	70– 90	
5.	65– 90	Anæsthesia passing off.
6.	65– 90	
8.	75–105	Dog conscious.
10.20		A fluidrachm of chloroform.
12.	65– 95	Dog profoundly anæsthetized.
12.50	50– 65	
13.	40– 50	
14.30	20– 30	Respirations slow and feeble.

Extended analysis of these experiments is scarcely necessary. They certainly show that the bromide may cause anæsthesia without reducing the blood-pressure, but also indicate that it is distinctly depressant to the circulation, reducing, when in excess, the force of the blood-current to a very marked extent. The suddenness of the drop in the arterial pressure seen in the latter part of Exp. II. is unpleasantly suggestive of what has been witnessed so frequently in the surgical amphitheatre during the administration of chloroform. In Exp. III. a still more sudden loss of heart-power occurred, the arterial pressure going down over 40 per cent. in a single minute. In the human being such a change of the pulse-force would be most alarming. A marked contrast is seen in Exp. III. between the cardiac action of the bromide and of ether. By the bromide the arterial pressure was reduced from "75–95" to "30–35." The animal was then allowed to recover, and anæsthesia was subsequently produced by ether and pushed to the final limit; the arterial pressure was "70–80" at the time breathing practically ceased, and rose to "80–90" under the influence of the asphyxia caused by the suspension of respiration. In Exp. IV. a comparison was made between the bromide and chloroform. When the dog was fully anæsthetized with the first agent, and the effect of the early struggles had passed off, the pressure was from "50–90;" with chloroform, "65–95," or, a little later, "50–65." The bromide would seem, therefore, to rival the older anæsthetic in its depressant influence upon the circulation. That this action is exerted upon man as well as upon the lower animals is apparently shown by the sphygmographic studies which have been made at the University Hospital by Dr. Sheppard, Resident Surgeon.

The next step in this study of the bromide was to determine whether the fall of arterial pressure is due to a direct action upon the heart. It was found that when the cut-out heart of the frog is touched with a drop of the bromide, or even when it is hung in the concentrated vapor, all movements cease at once. This, of course, indicates that the drug acts directly upon the heart-muscle or its contained ganglia. In order to be sure in the matter, three experiments were performed; one of these has been already noted, the other two are expressed graphically upon the succeeding page. Tracing No. 1 was obtained for comparison by injecting a fluidrachm of *ether* into the jugular vein, so that the whole of it should be precipitated at once upon the heart. Tracing No. 2 portrays the result of a similar injection of a similar amount of the *bromide*. In both these cases the animal was in a normal state; but in the experiment represented by tracing No. 3 the pneumogastrics were divided previous to the injection of a half-drachm of the bromide of ethyl.

The tracings do not need any discussion; taken along with the trials made upon the frog's heart, they prove that the bromide of ethyl acts as a cardiac paralyzant. The influence of this anæsthetic resembles, therefore, that of chloroform, and not that of ether; and it is altogether probable that it shares the dangerous properties of chloroform. It has been given, it may be, a few hundred times without causing a cardiac death; but how many thousands of times in succession is chloroform often administered in a city without a fatal issue!

The great superiority claimed for the bromide over ether has been its being less apt to produce sickness than is that anæsthetic. It does not appear, however, that this claim is just, even as regards the comparison with ether,—at least if the anæsthesia is maintained for any length of time. In Dr. Marion Sims's case the death was probably produced by the bromide.

Dr. Agnew informs me that he has employed the bromide seven times, and that in five of the cases there was vomiting. In one instance the vomiting was very severe, and lasted from before noon until the patient went to sleep at night. The proper comparison of this agent is not with ether, but with chloroform; and there is every reason for believing that the bromide is more apt to cause vomiting than is chloroform. There is one peculiarity about the bromide which seems to me to render it even more dangerous than chloroform, namely, that in order to get a prompt effect it has to be given very boldly, and its action has to be maintained by its free continuous use. Thus, Dr. F. L. Haynes writes me that he has employed it in several cases, and sometimes failed to

TRACING NO. 1.—Injection of fluidrachm of ether at * above the line (large normal dog).

TRACING NO. 2.—Injection of fluidrachm of bromide of ethyl at * below the line (large normal dog).

TRACING NO. 3.—Injection of half fluidrachm of bromide at * below the line (small dog, with pneumogastrics cut).

get the patient under the anæsthetic, and sometimes had the patient wake up in the midst of the operation with violent efforts at vomiting.

If any reader will examine the sudden fall of the arterial pressure in Exp. III. between the second and third minutes, and remember the great expensiveness of the bromide and the lack of any anæsthetic superiority on its part to chloroform, he will, I think, hesitate about endorsing this new agent.

ON THE REVISION OF THE UNITED STATES PHARMACOPŒIA BY THE CONVENTION WHICH MEETS IN WASHINGTON, D.C., MAY 5, 1880.

BY D. WEBSTER PRENTISS, M.D.,

Professor of Materia Medica and Therapeutics, National Medical College of Washington, D.C.

MORE than usual interest is taken in the coming revision of the Pharmacopœia, in consequence both of the fact of the great necessity of such revision, and of the unusual attention which has been called to the subject by the vigorous attempt of Dr. E. R. Squibb to take the Pharmacopœia out of the hands of the Pharmacopœial Convention and transfer it to the American Medical Association.

Although Dr. Squibb was overwhelmingly defeated in this attempt, there is no doubt that much good has been accomplished thereby in awakening both the profession of medicine and that of pharmacy to the importance of the subject.

One of the effects of this increased interest was the appointment of a committee by the American Pharmaceutical Association, in 1877, to make recommendations concerning the Decennial Revision of the Pharmacopœia in 1880.

The result of the appointment of this committee is the very excellent and painstaking report of Mr. Charles Rice, of New York, published in January of this year. How carefully and completely he has gone over the ground may be inferred from the fact that the report is embraced in a pamphlet (large octavo) of two hundred printed pages.

Valuable contributions in the same direction have been made by Dr. Squibb, Mr. A. B. Taylor, and Mr. Joseph P. Remington.

In making the forthcoming revision it is probable that many radical changes will be deemed advisable. It is better, in making these changes, to do it thoroughly and upon an established basis, in order that radical changes in the future may be unnecessary:

1. At the outset it may be fairly laid down as a guiding rule that the Committee of Revision should aim at *simplification* and as perfect a *classification* as possible.

2. The Pharmacopœia is not a book of *prescriptions*, nor is it intended to supply the place of a "Formulary." It is not supposed to save the physician the trouble of writing prescriptions when they can just as well (or better) be written extemporaneously, and when they must be so compounded by the pharmacist. It is a recognized principle with physicians that the prescription should be adapted to the requirements of each case; and nothing is more to be deprecated than *routine* prescribing. It is undoubtedly to the advantage of both physician and patient that the recipe should be *thought out* and its strength gauged to the needs of the case in hand. To include such formulæ in the Pharmacopœia (and there are at present many such) is to burden it unnecessarily and put temptation in the way of the prescriber.

Under the same heading comes that heterogeneous mixing of many drugs in one formula known as "polypharmacy." A patent example of one such is the proposed formula in Rice's Revision for "Chlorodyne." Such compounds are devoid of both rhyme and reason, and should be excluded. Hence we suggest that many preparations at present official had best be dropped and left to the *extempore* prescription of the physician. The principal of these are to be found among the decoctions, infusions, ointments, and suppositories.

The official suppositories afford us a very clear example of what is here referred to. They are preparations that cannot be kept in stock, but must be prepared just as called for. Their formulæ make them the simplest of prescriptions. A strength that will suit one case would most likely not be adapted to another, as, for instance, *suppos. morphiæ;* each one contains 0.03 grain of morphia,—a full dose for a strong man. Give this dose to a delicate, susceptible female, and most likely we will have a case of narcotic poisoning to deal

with. I have been informed by a pharmacist in this city (Washington), of twenty years' experience, and doing, perhaps, the largest prescription business in the city, that he has *never* had a call for an *official* suppository. They are always written for by prescription.

Furthermore, why burden the memory unnecessarily to remember the strength of such preparations?

3. *Uniformity of strength for the preparations;*—that is, let each class of preparations represent as nearly as possible a specified percentage of the crude drug from which they are made. None would question the advantage of such uniformity were it once established, as we believe it is entirely practicable that it should be, with a few exceptions. The fluid extracts are already uniform, representing weight for weight: hence, knowing the dose of the crude drug, no effort of the memory is required to know the dose of a fluid extract. If *tinctures*, *wines*, and *vinegars* could in like manner be made to represent a uniform percentage (say ten per cent.), what a simplification we have at once as to the dosage of perhaps one-half of all the compounds of the materia medica! And it is practicable to make this very change.

This would not only insure greater accuracy and guard against mistakes, but would also be a great saving of labor in learning and of mental effort in remembering doses of the different preparations now mostly arbitrary, which every teacher and student of materia medica will appreciate.

Let us see how the most important of all the preparations of the materia medica (namely, the *tinctures*) would be affected by making their strength uniform at ten per cent.:

By an examination of Mr. Rice's report it will be seen that *twenty-three* of the tinctures now represent a strength of about ten per cent., *eleven* have a strength of fourteen per cent., and *twenty-one* of twenty per cent.

Tinctures weaker than ten per cent. are: tinct. cantharides, four per cent.; tinct. capsici, four per cent.; tinct. opii camph., one part to two hundred and fifty.

Tinctures stronger than ten per cent. are: tinct. aconit. rad., forty per cent.; tinct. verat. vir., fifty per cent.

Thus twenty-three tinctures would be unaffected by the change; eleven would be reduced from fourteen to ten per cent., which would in no way interfere with their usefulness; twenty-one would be reduced in strength one-half. This would not increase objectionably the amount of alcohol, unless in cases of cinchona and hops. In regard to the latter, Stillé and Maisch say that it is of little service except for the *alcohol* it contains.—(National Dispens.)

Two tinctures (tinct. cantharides and capsici) would be raised from four to ten per cent.

Paregoric should be left unchanged, as an exception.

We have left the two strong tinctures,—aconite root and veratrum viride. To dilute these four or five times would be an undoubted improvement, as rendering accident from overdose less liable to occur. As they now stand they approach nearer to the fluid extracts than to the tinctures.

If the proposed change were made, no mistake could occur except on the safe side.

Those who prefer more concentrated preparations still have the fluid extracts, which can be diluted to any required strength on prescription. Indeed, as it now stands the fluid extracts are taking the place, to a great extent, of the tinctures.

It is proposed that in the Pharmacopœia, under the head of *Tincturæ*, general directions be given for their preparation, followed by a list of those which are official, and enumerating, with the requisite explanation, such as require peculiar treatment. Another obvious advantage of such an arrangement is that if all tinctures are understood to be of ten per cent. strength room is made for all new tinctures without putting them in the Pharmacopœia.

The principal objection to such a change will undoubtedly come from physicians, who, having learned the doses according to the present Pharmacopœia, will think it too much trouble to learn them over again. A little reflection, however, will show that it is far easier to learn a *system* of this kind than it is to even carry in the mind, although already learned, the arbitrary strength and doses of the present list.

It might be a question as to whether it were not better to make the *doses* of preparations uniform rather than the *strength;* but such an arrangement would involve quite as many changes as the one just pro-

posed, without the advantage of a *system* based upon the crude drug.

4. Make the *wines* and *vinegars* of same strength as tinctures,—ten per cent. This is suggested by Mr. Rice as to the liquid preparations of opium, the tincture, deodorized tincture, vinegar, and wine (paregoric being excepted), but there is no reason why the rule should not be extended to all the official *wines* and *vinegars*.

5. Make the dilute mineral acids twenty per cent. strength (HCy is to be excepted). There are but six of these dilute acids, yet how many physicians five years away from college can give their strength exactly? Let each one who reads this try it for himself.

6. A sufficient description of the drugs should be given to identify them, and a sufficient detail in chemical processes to make them unmistakable and practically useful.

7. In Mr. Rice's report he proposes that quantities shall be expressed in proportionate parts by weight. This is a move in the right direction, but does not go far enough. Proportionate parts should be in the per cent. ratio. Then the percentage of strength of each ingredient in every formula is shown at a glance.

8. The term *officinal* should be changed to *official*. The propriety of this change is so apparent that the wonder is the former term should have been retained so long. *Officinal* is from Latin *officina*, which means a "workshop," and can in no sense of consistency be applied to a Pharmacopœia, which is the *official* production of a convention. The word *official* is from *officium*, "an office," and means pertaining to an office. Those substances included in the Pharmacopœia are placed there by the "official" act of the Convention or its committee, and should be so termed (see "Attfield's Chemistry," 5th ed., p. 25, foot-note).

TRAUMATIC TETANUS—FAILURE OF BROMIDE OF POTASSIUM.

BY J. E. TEFFT, M.D.

RICHARD MILLER, colored, aged about forty, a sound and healthy man, on Wednesday, March 10, 1880, jumped from a pile of lumber, alighting on an old plank, and drove a nail through his shoe-sole, the nail penetrating the right foot between the first and second metatarsal bones, perhaps three-fourths of an inch in depth. The wound healed promptly without surgical attention. On Wednesday, March 17, at 10 A.M., he presented himself to me, saying that he could not open his jaws; he had also precordial pain "running through to his back." Of the symptoms I will only say that they consisted of trismus, diaphragmatic spasms, and opisthotonos. The spasms gradually increased in frequency until he died, at noon on Saturday the 20th.

Now as to treatment. Locally, the wound was reopened and a few drops of pus discharged, then dressed with hot poultices. He took from Wednesday, at, say, 11 A.M., until he died (three days), one drachm of bromide of potassium every three hours, missing at most two or three doses. From Thursday night he had twenty grains of chloral and one-sixth of a grain of morphine every four or six hours, so that he slept almost constantly except when aroused by the spasms. He also got strong soup, milk, and a little brandy. He apparently died from spasm of the respiratory muscles, though he was rapidly becoming exhausted.

I think the bromide had a fair trial and was exhibited in sufficient doses: the other treatment was auxiliary and not antagonistic.

SOLUTION OF SULPHO-CARBOLATE OF SODIUM AS A DILUTING FLUID FOR BLOOD-CELL COUNTING.

BY FREDERICK P. HENRY, M.D.,
Physician to the Episcopal Hospital.

BEFORE making a count of blood-cells, certain steps are necessary, the first of these being the selection of a diluting fluid. Several are recommended by writers upon the subject of blood-cell counting, chief among which are a solution of sulphate of sodium, sp. gr. 1020, Potain's solution, and the borax-urine and mercury-urine solutions of Prof. Keyes, of New York. The objection to the two former is that they do not prevent the development of bacteria and round- and oval-celled cryptogamic growths, both of which greatly interfere with the process of blood-cell counting, and to the two latter that they require considerable care and time in their preparation. In my experience, also, the borax-urine solution, which I have prepared in strict accordance with Dr. Keyes's formula, does not hinder the development of bacteria to the extent that is claimed for it by its inventor.

On January 2 I examined with the hématimètre a specimen of blood diluted

with a solution of sulpho-carbolate of sodium (sp. gr. 1020), and found it answer the purpose quite as well as the borax-urine solution of Keyes. Like the latter, it preserves the color of the cells and makes them globular. It also reduces their size, but not to the same extent as does the borax-urine solution, although the difference in this respect is slight. Finally, its preparation is only a matter of a few moments. The objection hitherto made to carbolic acid and other antiseptics, as adjuvants to fluids used for blood-cell counting, is that they will not prevent the rapid development of bacteria "unless added in a strength destructive to the blood-corpuscle." This objection does not apply to the sulpho-carbolate. At the date of writing these remarks, March 23, I used, in making a blood-cell count, some of the solution prepared on January 2, and found it perfectly clear and free from fungi and bacteria. In my opinion, this fluid, for blood-cell counting purposes, leaves nothing to be desired.

TRANSLATIONS.

GENERALIZED OR PARTIAL SPONTANEOUS PARENCHYMATOUS NEURITIS.—Under the designation "Spontaneous Neuritis" Joffroy (*Cbl. f. Med.*, 1880, p. 50; from *Arch. de Physiol.*) includes those cases not dependent upon trauma, a central nervous affection, or extension of disease from other tissues. A frequent form of partial neuritis is the rheumatic variety, *e.g.*, that affection of the ischiatic where muscular pain and atrophy, with degenerative reaction in the atrophic muscular structures, occur. A second ("toxic") form of neuritis is that dependent upon lead paralysis, which Joffroy does not think dependent upon central trouble. A third variety is that found in the course of acute infectious diseases where one nerve or another may be affected. (He gives a case of neuritis of the nerves of the arm with pain and consecutive muscular degeneration and atrophy occurring in the course of variola.) In most cases of spontaneous partial neuritis there are observed, besides wasting, an altered electrical condition of the muscles connected with the inflamed nerve, with paræsthesia of sensibility, anæsthesia or hyperæsthesia, and, in particular, severe pain in the entire course of the affected limb. This, if present at all in lead paralysis, is only slightly so.

These partial neuritides are the opposite of the "general parenchymatous neuritis," of which Joffroy quotes a number of cases and adds one of his own. In these cases pain is never present, as in the partial form of neuritis. In three cases the patients suffered from tuberculosis. The affection under consideration is distinguished from the poliomyelitis of adults by the light character of the earlier symptoms, and the invariable unfavorable tendency of the case after the earlier weeks.

A CASE OF CONGENITAL UNILATERAL TOTAL COLOR-BLINDNESS.—O. Becker (*Cbl. f. Med.*, 1880, p. 60; from *Arch. f. Ophthalm.*) observed, in the case of a girl of 17, total color-blindness of one eye, while the other preserved the normal ability to distinguish colors. It is surprising that in this girl's family several cases of total color-blindness on both sides were found among the males. It is possible that researches upon unilateral color-blindness may explain the curious facts known with reference to the overleaping of congenital color-blindness from a grandfather to the son of a daughter not herself color-blind.

PHLEGMONOUS GASTRITIS.—Three cases have recently been reported by Geax and Lewandowsky (*Cbl. f. Med.*, 1880, p. 61; from *Berl. Klin. Wochenschr.*) The symptoms were high fever, initial vomiting of mucous-bilious masses, circumscribed intense tenderness over the epigastric region, with rapid collapse. Abuse of alcohol, with defective diet, appeared to be the cause in one case, but not in the other. The ages of the patients were 52, 50, and 46 years, respectively; the duration of the disease, three, two, and four days. In one case there were morning remissions, rendering the affection liable to be mistaken for typhoid fever.

TREATMENT OF SYPHILITIC ULCERATIONS BY PYROGALLIC ACID.—Vidal (Soc. de Thérapeutique, *Bull. Gén. de Thérap.*, 1880, p. 184) has begun a series of researches upon pyrogallic acid, or pyrogallol. Pyrogallic acid, $C_6H_6O_3$, obtained by the dry distillation of gallic acid heated to 200°–215° C., occurs in the form of needles or fine white scales. It melts at 115° C., and boils at 210° C. At 250° C. it decomposes into metagallic acid and water. It is soluble in two and one-half parts of water, and is also very soluble in

alcohol, ether, and glycerin. The aqueous solution becomes black when exposed to the air. It is neutral. M. Vidal made his first experiments with pyrogallic acid in 1878, employing it in the treatment of psoriasis. In Vienna it is used as a succedaneum to chrysophanic acid. It must be employed with caution, on account of its action upon the kidneys.

The syphilitic ulcerations in which M. Vidal employed pyrogallic acid were of a phagedenic character, and had resisted all previous efforts to stay their course. The acid was employed in the form of ointment, one part to five of lard, and was applied on three successive days; the pain caused was moderate, and only lasted eight or ten minutes. Under the action of these three cauterizations the surface of the phagedenic ulcers was decidedly modified. Three more applications were made, resulting in a rapid cure.

Since this first successful case M. Vidal has employed this ointment for the purpose of dressing chancres, with very favorable results. The pure acid does not seem to have the same effect. He thinks it possesses an elective affinity for neoplastic tissues. Dr. Dujardin-Beaumetz, however, does not agree with him on this last point.

Relations of Syphilis of the Lung and Phthisis.—From a recent work on this subject by Schnitzler, of Vienna, noticed in *Le Mouvement Médical*, we abstract the following:

1. Pulmonary syphilis is common; sometimes it is the result of general infection in its later stage, sometimes it presents itself promptly in the secondary period. Ordinarily it follows syphilis of other organs, the skin, mucous membranes, bones, liver, testicles, and brain. 2. The symptoms are usually those of pulmonary phthisis, causing the diagnosis during life to be difficult, and rendering even the post-mortem inspection sometimes more or less equivocal, because of the difficulty of distinguishing in the general pulmonary infiltration what is strictly tuberculous and what is gummous. 3. The diagnosis is based upon the functional troubles observed in the course of the disease, upon the influence of treatment, and upon the presence of infection in other organs. 4. The prognosis is always serious, but not constantly unfavorable when the disease is recognized, even at an advanced period. 5. Without specific treatment the disease eventuates in phthisis and death. 6. The treatment should be antisyphilitic, that is, both iodine and mercury, and Professor Schnitzler assures us that the results obtained from specific treatment will often be beyond our expectation.

Influence of Brandy and Wine on Digestion.—M. Leven (Soc. de Biologie, *Bull. Gén. de Thérap.*, 1880, p. 185) says that if a dog, to whom has been given two hundred grammes of food with seventy-five grammes of brandy, be killed five hours later, the food is found undigested in the stomach, the internal surface of which is red and congested. In addition, one hundred and sixty grammes of a clear, transparent, feebly acid liquid are found, containing 1.90 grammes of hydrochloric acid to the litre. This liquid contains no pepsin, and is without digestive power. It is probably the result of aqueous endosmosis, produced under the influence of excitation of the gastric mucous membrane. There is no trace of alcohol in this fluid. Brandy, therefore, in excess irritates the stomach without favoring digestion. Further experiments showed that brandy given in small quantities, and especially if well diluted, is favorable to digestion.

Etiology of Erythema Nodosum.—Neumann (*Cbl. f. Med.*, 1880, p. 63, from *Wien. Med. Wochens.*), in opposition to many authors, regards erythema nodosum as an idiopathic affection, having nothing in common with erythema multiforme but the name. It occurs in weakly individuals, either without premonitory symptoms or with slight fever and rheumatism, and disappears spontaneously within three to four weeks without relapse. The erythematous tubercles may, however, occur in connection with pleurisy, rheumatism, or pyæmia.

Salicylated Camphor.—Dr. Henrot (*Union Méd. du Sud-Est*) employs the following:

℞ Acidi salicylici,
Pulv. camphoræ, āā 10 grammes.
Mix, and add alcohol of 90°, 10 drops.

Triturate, and then mingle with ten to twenty grammes of vaseline to which sufficient paraffine has been added to give the consistency of an ointment. This preparation is slightly caustic, and has been used with success in phagedenic ulcers.

The Ophthalmological Section of the International Medical Congress is to meet in Milan during the first four days of next September.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, APRIL 24, 1880.

LEADING ARTICLES.

AN ABSTRACT OF PROFESSOR SCHIFF'S LECTURE ON CONDUCTION IN THE SPINAL CORD.

Delivered at the Meeting of the German Naturalists and Physicians held at Baden-Baden in September, 1879.

Prepared from the Original Papers and Preparations of the Author

BY B. F. LAUTENBACH, M.D., PH.D.

SINCE my first publication on the subject, said Professor Schiff, I have continued my investigations on the spinal cord, and have especially much improved the methods of determining the extent of the lesions produced by physiologists. I have endeavored also to keep the animals alive as long as possible, so that the primary effects of the operation might be distinguished from the durable paralytic and anæsthetic effects, and to study these latter in all their phases. The method of operation now adopted by me is very similar to that described in my "Lehrbuch der Muskel- und Nerven-Physiologie." For the operations on the white substance my former method has been retained in all its particulars. The gray substance is destroyed by mechanical irritation or through injections of ink, etc., thereby producing an inflammation. The degeneration and resorption of the destroyed portions is then waited for. It is simply impossible to destroy in any other manner the functions of the gray matter without at the same time affecting the white substance.

In the autopsies transverse sections of the spinal cord are made; but, as these are examined with transmitted and not with reflected light, these sections have to be relatively thin. The examination of transverse sections taken on the level with the wound is, in most cases, of but doubtful utility, and must be made with the greatest care, as the hardened cord becomes brittle at the edges. It is true that this is no longer to be feared when, as in all the conclusive experiments, the animals have lived for a long time after the injury, and consequently the true inflammatory process is over. At the best such investigations only show how much of the cord has been cut. But as the loss of function following a section into the nerve-substance always (and a fraction of a millimetre is here often of the greatest importance) extends farther than the section itself, and as the portions of the cord limiting the extent of the wound are also made functionless, we must seek a more accurate method of determining the extent of the lesions produced. For the white substance* this is absolutely possible, provided the animals live long enough after the operation. There is then found in the vicinity—sometimes only one-quarter to one-half millimetre above and below the wound—the so-called *primary degeneration*. The nerve-fibres disappear in a sclerotic tissue, and just as far as these fibres have vanished we must conclude that just thus far the cord has been rendered functionless by the operation.

The spinal cord is best hardened in alcohol to avoid the use of coloring agents. With the free hand it is then cut into not too thin sections, and these are then examined with the polarization microscope; when necessary, the plate of gypsum is used. A very weak power that will allow the whole of the transverse section of the cord (dog) to be seen at one time suffices to show in every preparation (prepared, as usual, with the oil of cloves, and afterwards enclosed in balsam) every single transverse section of an undegenerated nerve-fibre much better than it can be seen with the ordinary light and the higher powers. The nerve-fibres are seen in the dark field of vision as bright points with black crosses.

The investigations made with polarized light give us, in this manner, a certainty and facility, combined with the power of rapidly examining the preparations, which can be attained with no other method. When within the limits of the white columns—which are first focused with the gypsum prisms not crossed—on the crossing of the prisms no bright points are seen, it is certain that all the longitudinal fibres have really degenerated. The absence of fibres could not have been produced after death in the preparation of the sections, as they must have been destroyed during life in order to have de-

* This great accuracy is at present not of so much importance for the gray substance.

generated and lost their double refracting power. If during life but *one* fibre or group of fibres at the edge or in the angles of the gray substance had escaped section, it would have been detected immediately, by this method of investigation, by the uninjured fibres appearing very bright. The limits of the gray substance can be seen most sharply defined by turning the prism, and in this manner it is often possible to see the border of the gray fibres, when with ordinary light it would not have been seen. A higher power, with more intense light, must be taken in order to determine with certainty that what seems to be gray substance is really such, and not another degenerated tissue, which fails to doubly refract.

The preparations [which were open for examination every afternoon during the continuation of the meeting] are taken from dogs who lived a number of weeks (to four months) after the operation.

After the explanation of the methods which I have just given, you will easily recognize that in some of these preparations all of the white columns have degenerated, *i.e.*, they contain *no trace* of double-refracting elements, while already immediately above and below the gray substance, with its ganglionic elements, has remained unaffected. The degeneration shows the extent of injury at the point of section. As a comparison, I have placed by the side of these preparations others where some portion of the white columns (ofttimes against my will) has escaped injury. You will see the uninjured fibres as bright groups in the dark field.

I further show you a preparation (dog) taken at a great distance from the wound, which involved the whole of the white substance. Then, again, you see groups of normal fibres, which with the aid of the gypsum-plate (red, first order) become very apparent through their color and brightness. In one of the preparations you find in the anterior columns but four double-refracting primitive fibres. In some of these preparations, which I have colored with carmine, can be observed in the—according to the testimony of the polarization microscope—totally-degenerated anterior column, very near the anterior nerve-roots, three or four of the red points, which have tentatively been called naked axis-cylinders. In a communication which I design making, the reasons will be given why I think that these points should not be regarded as axis-cylinders. But, even were I mistaken in this regard, it could not influence this demonstration, as the loss of the medullary sheath already shows that the degeneration has commenced here, and the degeneration is only expected to show the extent of the artificial lesion.

These preparations demonstrate, *ad oculos*, how much those gentlemen are mistaken who declare that it is absolutely impossible to cut the whole of the white substance or individual columns of the same in their entirety without at the same time producing an extensive lesion of the gray matter. To do this, it is true, much patience is necessary, and I have had to make many unsuccessful experiments in order to obtain a sufficient number of decidedly convincing facts and observations. In making these experiments the operator must endeavor to follow, as nearly as possible, the well-known anatomical shape of the columns. The sections which are made in straight lines and right angles are mistaken methods, and it is impossible, by their aid, to arrive at accurate facts respecting the physiology of the spinal cord. Such methods could only lead to erroneous views, and this was so much the more possible as the observations were continued only for a few hours, during which time the influence of trauma and of the effusion of blood into the interior of the cord could not be distinguished from the durable effects of the lesion. My dogs in whom the white columns were entirely cut across, and others where the lateral white columns only were cut (at the last dorsal and first lumbar vertebræ), were, in the first hours, as if paralyzed, and sensibility was either absent or much diminished in the parts posterior to the injury. Little by little, however, the animals recovered the sensibility to pain and pressure, and, where the posterior columns were concerned, also that for touch, and voluntary movements of the hind legs and tail returned. The movements were often somewhat unsteady, but were present in every joint. The sensibility to pain was complete.

Even when the gray substance was considerably injured with the white, the movements and sensibility (the last with the modifications well known from my

older experiments) return, and I can, from these experiments,—of which I show you no examples,—only repeat that the sensibility of all portions of the posterior part of an animal and voluntary movements are conducted if a relatively very narrow bridge of normal gray matter remains. The same portions of gray substance which correspond to this bridge may be cut across a centimetre above or below the chief injury, and yet the conduction not be interfered with. The bridge of gray matter may be in the middle or in either of the lateral halves. If this bridge be very small, however, and should it comprise only the external part of one lateral half of the gray substance (which in dogs, cats, and rabbits is enclosed between the folds of the white lateral columns), the sensibility of but one side of the parts posterior to the section will remain. In cats the insensibility usually remains on the side corresponding to that where the bridge of gray matter exists, while in dogs it is usually the opposite side which is sensible.

I have just alluded to the lateral ramifications of the gray matter. It seems that their existence is not yet generally known, and that many are still of the false opinion which was at one time defended by Ludwig and Biel,—that they are only connective-tissue septa, which proceed from the membranes of the cord to the gray matter. It is true that connective tissue and blood-vessels are to be found in these ramifications. Stilling long since, and especially in his great work on the spinal cord, showed that these ramifications are chiefly composed of nervous continuations of the gray nervous matter of the cord (ofttimes with ganglionic bodies), and that these extend far into the lateral columns, and then turn upwards or downwards, in part returning to the central gray matter. Most of the investigators who have examined these ramifications under high powers of the microscope have recognized their essentially nervous nature, and I have found new arguments to sustain the teachings of Stilling, even without the aid of a very strong objective.

Should we, as do certain experimenters of the Leipsic school, fail to recognize these ramifications, we could believe that we had cut across or destroyed all of the gray substance which could connect the anterior with the posterior portion of the body, when in reality only the central gray substance had been cut. As in such cases sensibility (often very marked) still continues in the parts posterior to the section, we would arrive at the false conclusion that sensibility is only conducted by the white columns; and should we not be able to differentiate between sensibility to touch and sensibility to pain? And should we, further, know naught of the retardation of sensory conduction, it would be possible for us to say that *all* sensory impressions are conducted by the lateral columns, and the apposition of physiological experiment with pathological observations would be complete.

It has now, however, become possible to prove what I formerly could only give as very possible,—that the *white longitudinal fibres of the antero-lateral columns conduct no sensory impressions to the cerebrum.* On the contrary, they serve for the voluntary movements.

In a series of experiments I was able, in the region of the first lumbar vertebra, to destroy the whole of the gray matter, including even the outermost ramifications in the lateral columns. The most, and perhaps all, of the longitudinal fibres of the white lateral and anterior columns retained their structure and double-refracting power, but the shape of the lateral columns was so changed that, as you see in the preparations, its innermost bundles of fibres, having lost their hold, extend into the seemingly greatly-enlarged central canal, around which not the slightest trace of gray matter is to be seen. In these cases partial voluntary movements of the hind extremities—at least, from the knee downwards—still existed, but *all sensibility*, even for the strongest induction-currents with the electrodes inserted into the skin, *was permanently gone* provided the white posterior columns were cut across.

I show you other preparations, which show that the degeneration following the inflammation of the gray substance extends underneath the wound sooner in the lateral ramifications than in the central gray matter.

You will excuse me from giving a summary of my results, as my chief object is to show you, by means of preparations, that the experiments were really made as I described them. It is to me a pleasure to be able to say before you that the continuation of the experiments has more

and more added to the conviction that I have not a word to withdraw from the exposition which I gave twenty years ago of the physiology of the spinal cord, though there is much to add from the stand-point which I take at present.

REVIEWS AND BOOK NOTICES.

CLINICAL LECTURES ON THE DISEASES OF WOMEN. By J. MATTHEWS DUNCAN, M.D., etc. Philadelphia, Henry C. Lea, 1880.

"There are so many cases for which there are no names!" is often the despairing cry of the practitioner, as he tries to fit the ever-varying phases of disease to a rigid nomenclature. The book before us gives no mean assistance to such a task. It does more; it suggests happy names for certain groups of morbid conditions, and describes the groups with definiteness, making them picturesque and their images lasting.

The faculty of pleasant writing seems one more often bestowed upon the British than upon the American medical writer. Just what it is we lack, just what it is that renders so many of their books charming, is hard to define. They have a thorough mastery of the use of the king's English, which is not necessarily the same as the president's English; a care about style as well as matter; a wider glance, that takes in the relation of things to other things beyond the writer's own limited field. One can never discover a new planet by ever so assiduous use of the microscope.

Take such subjects from the table of contents before us in Dr. Duncan's little book as "Missed Abortion," "Painful Sitting," "Aching Kidney," "Hepatic Disease in Gynæcology and Obstetrics," and our meaning will be clear. The writer draws pictures and experience acknowledges their truth, yet we search in vain the lists of a cast-iron nomenclature for what we want.

Lecture II., on "Abnormal Pelvis," gives the student plain directions for pelvic measurement. In the graver cases of deformity the author says, "It has been common for students or practitioners to divide themselves into two classes, and one set to swear to a belief in version, while another set believe in forceps as the proper mode." But he claims for such cases a higher decision than partisanship,—that of a careful judgment in each individual case,—and that all recent improvement is improvement not in diagnosis but in a judgment based not alone on a minute measurement of the congregate, but of all the varying elements of the case.

In judging of statistics he says, wisely, "The forceps cases of a forceps enthusiast are unfairly set against those of one who barely uses the instrument." The chapter on "Chronic Catarrh of the Cervix Uteri" is iconoclastic, yet conservative, but not of the old time-honored traditions of caustic and ulceration, when "over the whole world gynæcological practitioners were busy with the speculum and caustic, and thought they had in these tools a panacea for the diseases of women." Happy days for the gynæcologist who did his duty according to his light! Now, alas! his lights are so many, so varied and intense, that their glare confuses him. The author's treatment of cervical catarrh consists in a weak lead lotion and the zinc alum stick. Perimetritis and parametritis — names which flourished with vigor but whose death-knell has sounded —and ovaritis form the topics of very instructive chapters.

The name "Painful Sitting," Chapter VIII., is "just as good for a disease as dysmenorrhœa, and quite as distinctive." The whole list of chapters contains none that is not filled with the apt illustration and personality of the author. The digressions are frequent, and add to the interest. In Chapter XVI., on uterine hæmatocele, he takes the opportunity to give his views on diagnosis: "I have seen practitioners prescribe and then set their brains to work to ascertain what is the matter." He calls diagnosis by exclusion "a limping method," and "a very shabby method," but uses it. In anatomy and pathology we "have now," he thinks, "to get a microscope with a lens of the highest power to find anything new;" still there may be "some great nuggets buried in the field of medicine even now." Certainly in the discovery of small nuggets, and the polishing of them till they shine with the true golden lustre, few can equal the author. E. W. W.

A MANUAL OF PATHOLOGICAL HISTOLOGY. By V. CORNIL and L. RANVIER. Translated, with Notes and Additions, by E. O. SHAKESPEARE, A.M., M.D., and J. HENRY C. SIMES, M.D. With Three Hundred and Sixty Illustrations on Wood. Philadelphia, Henry C. Lea, 1880.

This important work, in its American dress, is a welcome offering to all students of the subjects which it treats. The great mass of material is arranged naturally and comprehensively. After an elucidation of the normal animal cell, its lesions are clearly given. Under separate chapters the normal histology of the tissues is briefly explained, and then the pathology of the same tissues follows; and thus by comparative contrast the otherwise difficult interpretation of diseased tissues becomes easier. Healthy anatomy first, then pathology; and thus only can the subject be rightly studied.

The classification of tumors is clear and full so far as the subject admits of definition, and this one chapter is worth the price of the book. The chapter on the skin, its diseases and parasites, is intelligent, readable, and

reasonable. A valuable bibliography of the subjects treated is added to the volume, and enhances its value; also a too short appendix on the technology of the subject. In coming editions it is to be hoped that an entire chapter will be given to best modern methods of preparation and demonstration, because correct interpretation in such studies depends entirely upon correct methods of work. So far as the able translators have gone in this direction it is well; but the great value of this work to our students warrants amplification in this direction.

The illustrations are copious and well chosen. But we must say with *general reference* to such illustrated works, in which delicate structures seen under best microscopes are printed, that the pencil has not kept pace with the increased revelations of our lenses. Diagrams must give place to accurate copies of what we see in all advancing works. A blacker ink would have given greater distinctness to the page and cuts. Without the slightest hesitation, the translators deserve honest thanks for placing this indispensable work in the hands of American students.

J. G. HUNT, M.D.

EYESIGHT: GOOD AND BAD. By R. BRUDENELL CARTER, F.R.C.S. London, Macmillan & Co., 1880.

In this little treatise on the exercise and preservation of vision, the author has introduced for popular reading much that is as interesting as it is necessary to know in the order and standard of popular education at the present day. The book is written with the purpose of making known precepts and injunctions relating to the subject plainly intelligible to the popular mind; and from its style and language it will fully do so to any intelligent person.

The first chapter is occupied in explaining the anatomy and structure of the eye and its appendages. Then come chapters on light; on form and properties of lenses and their images; on refraction and accommodation; on near and distant vision. Others follow on color-perception and color-blindness; on the care of the eyes in childhood and adult age, with hints as to the influence upon sight of the general health and habits of living; also remarks upon natural and artificial illumination when using the eyes, and contrivances for saving visual effort.

A great deal of interesting and instructive material is introduced in the two hundred and sixty pages of this little book, many of which are of a practical import that should give it value to the general reading public, as well as to the profession. K.

NOTES ON THE DISEASES OF THE TESTIS. By SAMUEL OSBORNE, F.R.C.S. London, J. & A. Churchill, 1880. Pp. 117, 12mo.

This little book contains a brief account of the diseases and congenital defects of the testis. Each subject is succinctly sketched, and the whole forms an outline of an important surgical subject. Little originality either of description or of treatment is noticeable, while some omissions in the latter are to be regretted. The author states in his preface that differences of opinion from standard authorities will doubtless be discovered. Such discoveries on the part of the reader are in certain chapters conspicuous enough. Mr. Osborne assumes a great responsibility in ignoring the cautions frequently uttered as to the dangers of pyæmia following ligations of the veins in the operation for varicocele. He has a perfect right to differ from standard authorities, but he should at least respect their teachings.

STUDENT'S PRIMER OF THE URINE. By Dr. J. TRAVIS WHITTAKER. Philadelphia, Presley Blakiston, 1880.

This is a good little book, chiefly valuable for the sixteen plates which it contains representing the various deposits and foreign bodies found in urine. These plates are etchings upon copper, done by Dr. Whittaker himself, and are possessed of great verisimilitude, as well as in other respects admirable. The book is very appropriately dedicated to Mr. Seymour Haden, who, whilst a surgeon in large practice, is one of the best of living etchers.

GLEANINGS FROM EXCHANGES.

HARELIP.—In a very elaborate paper on this subject, Dr. W. I. Wheeler, of Dublin, enters into the minutiæ of this deformity, and relates a few striking cases, selected from a large number that have come under his observation. All of these cases were successfully operated on, the distorted parts being restored to their normal positions. With respect to the proper time for operation, Dr. Wheeler claims that no absolute rule can be laid down. When feeding is seriously interfered with, it may be necessary to correct the deformity very soon after birth; while again the patient may not be possessed of sufficient vital force to withstand so severe a shock until months, or even years, have passed. When, however, the surgeon is able to make a choice, Mr. Wheeler would choose from *three to six weeks after birth, and certainly within three months.* There are several results to be looked for from the operation, the most important being the closure of the fissure. It would seem equally essential, however, that the prælabial curve should be restored, the unsightly notch prevented, the fossa labialis formed, and the nose, whether distorted on one or both sides, restored to its proper position; and all these can, in the majority of cases, be attained by a proper exercise of surgical artistic skill.

The treatment of the protrusion of the intermaxillary bone is fully discussed in the paper, and the conclusion arrived at that it should not be removed. In almost every case it can be bent back into position, and held there by interosseous sutures, the gums being joined over it by the interrupted suture. Dr. Wheeler believes that the harelip pin affords the best means for avoiding the notch, elevating the nose when depressed, and holding the parts evenly together. He believes, further, that no instrument or special bandage devised for supporting the cheeks will ever supersede plaster or give the same even support. In addition to the narrow strips ordinarily employed, great advantage will be derived from a large strap passing under the chin to the malar bones, the soft parts being pushed forward towards the mouth before its final adjustment. To prevent hemorrhage from the coronary arteries he uses strong spring-compressors, which facilitate the operation by affording more room for the operation, steadying the muscles, and rendering the cut edges much drier when about to be joined. He uses the scissors for refreshing the edges in preference to the knife, and claims that much advantage is derived from the addition of a sheath on the under blade. By means of this modification the operator can accurately gauge the amount of tissue cut, and thus sever it in one stroke, the solidity of the under blade giving support to the lip. The addition of this sheath gives all the advantages claimed for the bistoury, and removes the objection to the scissors. (*Dublin Journal of Medical Science*, January, 1880.)—*N. Y. Med. Record.*

TETANUS AND ITS TREATMENT BY INHALATIONS OF CANNABIS INDICA.—Dr. John Lucas (*Med. Times and Gaz.*, February 21, 1880) says that no substantial basis for rational treatment, to be successful as a general rule, can be expected to be arrived at until we come to know more of its etiology and morbid anatomy. Of drugs which have recently been used, Indian hemp and calabar bean (both by mouth and hypodermically), jaborandi, and in fact almost every antispasmodic, narcotic, and sedative in the Pharmacopœia, may be said to have had its day. Hydrate of chloral has established a reputation during the past ten years which it still maintains, as has nitrite of amyl in a less degree. Surgical methods of treatment have also been from time to time put forth and practised, from the division of the suspected nerve to the amputation of a limb or portion of a limb where a wound existed. Nerve-stretching, although it has not yet had a thorough trial, is worthy of consideration.

The treatment by inhalations of Indian hemp originated with Mr. Khastagir, of India, who cured five cases by this method. Dr. Lucas says that as asphyxia is, in a large proportion of cases, the *causa mortis*, by the rigid contraction of the respiratory muscles, it seems likely that measures to avert this would, if successful, be valuable remedial auxiliaries. He has the patient kept perfectly quiet and secluded. Then a hookah charged with leaves of cannabis Indica, alone or mingled with double or quadruple its bulk of tobacco, is kept at hand, and the patient directed to begin smoking this so soon as the spasms begin, and to continue until they subside (which they really do soon) and he looks drowsy and inclined to sleep. The attendant then leaves the patient in quiet and alone, and prepares the pipe for instant use again. When the patient wakes with a spasm the pipe is at once put to his mouth, and he takes a few whiffs until it passes off, also taking a little nourishment, and then smoking again until narcotism is produced. In this way he is kept continuously day and night under its influence. An ordinary pipe with a large tube and large bowl will answer equally well, or the hemp may be given in the form of cigarettes mixed with a little tobacco. Each dose of the smoke may be regulated from eight to thirty grains, commencing with the smaller dose, and gradually increasing it as tolerance is established. The advantages of this treatment are that the spasms are cut short, they reappear gradually at longer intervals, become less severe, and finally the patient's vital powers are saved from exhaustion and life is saved.

THE DANGER ATTENDING THE USE OF SALICYLIC ACID IN ACUTE RHEUMATISM.—Dr. Maclagan (*Lancet*, vol. i., 1880, p. 327) says that in acute rheumatism, the heart being inflamed, attention is usually concentrated on the membranes, but the substance also suffers. When severe, myocarditis is apt to be fatal, and is frequently recognized in the post-mortem room. In a mild form Dr. Maclagan believes it to be more common than is usually supposed. It may exist independently of inflammation of the membranes. In all forms it produces softening and weakness of the muscular substance.

Salicylic acid, no matter whether given alone or in combination with soda, exercises a depressing action on the heart. This action is by no means general, and is probably due to some idiosyncrasy of the affected individuals.

If this depressing action be produced in one in whom the heart is physically sound, no great harm will be done. With the omission of the drug the depression will soon pass off.

But if it be produced in one who is already the subject of rheumatic myocarditis (an ailment which is not easily recognized during life), and in whom, therefore, there exist softening and enfeeblement of the ventricular walls (for the left ventricle is the chief seat of such inflammation), the depression is likely to be alarming, and may be fatal.

To form an adequate estimate of the nature and extent of the dangers attendant on the administration of salicylic acid in acute rheu-

matism, we must recognize, first, the tendency of the rheumatic poison to produce inflammatory softening and weakness of the muscles of the heart, and, secondly, the tendency of salicylic acid to depress that organ. In the combination of these two lies the danger of the drug, and in the absence of the tendency to produce such depression lies the superiority of salicin over salicylic acid.

VARICELLA GANGRÆNOSA.—At a meeting of the London Pathological Society (*Medical Times and Gazette*, 1880, p. 221) Dr. Abercrombie exhibited the dead body of a child, which presented on the scalp, face, neck, and upper part of the trunk many circular, depressed, sharply-cut, ulcerated spots about the size of a sixpence or shilling. The child had been admitted into the hospital two days before death, with a rash like varicella, when these ulcers were already beginning to form. The child died of pneumonia. At the post-mortem there was found a small tubercular ulcer in the small intestine, and some of the mesenteric glands were caseous. Mr. Hutchinson remarked that the specimen justified the epithet —"varicella gangrænosa"—he had suggested for such cases. He had also seen a similar case of what he would call "vaccinia gangrænosa." Dr. Barlow had seen several examples of such ulceration. In Guy's Hospital Museum there was an excellent model of the condition, labelled "rupia escharotica." (This model is also in the Museum of the University of Pennsylvania, labelled thus.—ED. *P. M. T.*) In all the cases he had been able to examine post-mortem he had found more or less tubercle, and it was to this he had at first attributed the gangrenous ulceration. But a recent instance had proved to him that they were cases of varicella. A bulla first appears, on which a thick crust forms, and under it deep ulceration goes on rapidly, so that in a few days bone may be exposed. The condition is usually fatal.

FIBROUS AND OSSEOUS CHANGES IN A FATTY ABDOMINAL TUMOR.—Dr. Dreschfield, at a recent meeting of the London Pathological Society (*Med. Times and Gaz.*, 1880, p. 220), exhibited three tumors removed from the abdomen of a woman of 49. A hard, painless swelling in the left lumbar region, of several years' duration, gradually became tender, and a similar tumor appeared in the right side. There was loss of appetite and flesh. Operation, with removal of an osseous tumor from left lumbar region and a larger and less firm fibro-fatty mass from the right side. The patient died from peritonitis and shock on the fifth day. At the autopsy an enormous fatty tumor weighing twelve pounds, attached to the back of the abdomen, was removed. The smallest tumor removed by operation was found to be of bony structure and of ivory hardness throughout; and near its point of attachment to the fatty mass several small nodules of bone were found. The second tumor was of larger size, and was partly fatty, partly fibrous in structure. The third mass was purely fatty. The interest of the specimens is twofold: first, because of their extreme rarity, only two instances being recorded in the society's *Transactions;* and secondly, because, while calcification of fatty growths is not uncommon, true ossification is extremely rare, and fibrous degeneration at the same time in an adjoining growth still rarer.

A CONTRIBUTION TO THE THERAPEUTICS OF STARCH-DIGESTION.—Dr. Roberts, of Manchester, England, gives the results of his investigations on the subject of the digestion of starch. He says that in infants under three or four months of age saliva has a feeble diastatic power; further, he has ascertained that the pancreas of sucking calves does not possess any diastatic power, and that it is fair to presume that the pancreas of the infant at the breast is in the same condition. For this reason farinaceous food cannot be digested by young infants, unless some artificial means be employed. Malt extracts being infusions of malt concentrated to the consistency of syrup or molasses by evaporation (containing about seventy per cent. of maltose, which is of no more value as food than an equal amount of syrup), the diastase exists only in small quantity. As to malt infusion, it possesses powerful diastatic properties. It is made as follows: three ounces of crushed malt are very thoroughly mixed in a vessel containing a half-pint of cold water; the mixture is allowed to remain from twelve to fifteen hours, and then passed through filtering-paper until it comes through perfectly bright. It is rich in diastase, and contains maltose in considerable quantity. As it is liable to fermentation, it should be freshly prepared each day; or it may be preserved by adding a few drops of chloroform to the infusion, and keeping it well corked. He thinks that the malt preparation will prove of more service if taken with the food than after the meal, as by so doing it will become thoroughly mixed with the food. An excellent way of administering malt infusion is by adding one tablespoonful to half a pint of gruel. In conclusion, he speaks of the liquor pancreaticus, made by infusing one part of fresh pancreas with seven parts of water; this was found to possess twenty times the diastatic power of the malt infusion alluded to. (*The Practitioner*, December, 1879.)—*New York Medical Record.*

INTUSSUSCEPTION—INFLATION WITH AIR—RECOVERY.—Dr. Ransford (*Lancet*, vol. i., 1880, p. 326) was called to see a child 11 months old, who had been suddenly taken ill with vomiting, pain in the bowels, and the passage of blood and mucus. On examining the abdomen, a sausage-shaped tumor, about two and a half inches in length, could be felt in the right hypochondriac and right lumbar regions; the rectum was dilated, but contained

nothing but blood and mucus, which came away in large quantities on withdrawing the finger from the anus. Various remedies having been tried in vain for twenty-four hours, inflation, by means of a bellows and long enema-tube, was resorted to. The first inflation was without benefit, but the same procedure being again practised five hours later, on withdrawing the tube the end was found covered with fluid fæces. From this time the tumor disappeared, and within a few days the child was well.

OXYURIS VERMICULARIS AND ITS TREATMENT.—A correspondent of the *Lancet* (February 21) says that failure to get rid of this annoying helminth is often due to the belief that it only inhabits the rectum and can be washed out by any injection. The fact is that they are found all along the intestinal tract, are bred up above the rectum, and only emigrate there when full grown. The following plan of treatment has been followed successfully. Interdiction of all raw or partially-cooked fruit and vegetables, sweets, preserves, figs, raisins, etc.; a daily injection, as large as can be retained, of dilute infusion of quassia, lukewarm, to which may be added a drachm [Dangerous dose.—ED. *P. M. T.*] of carbolic acid with advantage. At the same time three or four drachms of powdered charcoal daily, and five or six grains of santonin, dissolved in half an ounce of castor-oil, at night, after a few days substituting for this treatment a glass of Friedrichshall water every morning, fasting, and a mixture containing tincture of iron, tincture of nux vomica, and infusion of quassia three times a day. This will improve the condition of the intestine and diminish the mucus which is present in these cases.

VASELINE AS A BASE FOR OINTMENTS.—Dr. P. H. Cronin, in the *St. Louis Courier of Medicine*, gives some practical suggestions with reference to the preparation of unguents with vaseline as a base. Being slightly soluble in alcohol and insoluble in water, tinctures and aqueous solutions do not combine with it. It mixes with glycerin, but on the addition of water separates. Such substances as iodide of potassium, chloral hydrate, iodine, or tannin, should be finely triturated and thoroughly mixed with the vaseline. Chloroform ointment is prepared by melting the vaseline in a wide-mouthed bottle in a water-bath, at 97° Fahr., adding the chloroform, corking quickly, and shaking briskly till cold. Gynæcologists will find that by triturating borate of sodium to a fine powder, and mixing with a little glycerin before adding to vaseline, they will have a fine preparation for vaginal examinations, instead of the gritty, "salted butter" preparations which they sometimes obtain from the pharmacist.

TRANSPLANTATION OF BONE.—At a recent meeting of the Glasgow Pathological and Clinical Society (*British Medical Journal*, vol. i., 1880, p. 364) Dr. McEwen showed a boy on whom he had operated for necrosis of the humerus. The whole shaft had died, and was removed subperiosteally. New bone was produced at the upper and lower ends, but a gap of about two and a quarter inches was left in the middle, in which no bone formed. About a year after the operation it was resolved to transplant a wedge of human bone into the gap. The bone to be transplanted was taken from the tibia in a case of osteotomy, and it was cut into small pieces before being introduced into the arm between the parts of the humerus. This was done antiseptically, and the wound healed without pus. Eight weeks after there was still a gap, but it was much less than formerly, and the result was so favorable that Dr. McEwen has resolved to repeat the operation.

ECZEMA OF THE UMBILICUS IN INFANTS.—Mr. Edmund Owen (*British Med. Jour.*, vol. i., 1880, p. 357) says he has seen a good many examples of the following strange condition of the umbilicus in very young infants. Close around the cicatrix is a red and irritated or eczematous patch of skin, whilst from the depths of the umbilical fossa oozes a thin purulent fluid. For the cure of this affection lotions and all other kinds of dressings avail nothing; for at the bottom of the depression, and hidden by overhanging folds of skin, there is a small fleshy polypus, which has sprung up from the scar of the fallen umbilical cord. By the ligature of one of these growths, Mr. Owen says he has seen a boy at once cured of a condition which had troubled him and his mother from the first month of his existence.

SUBCUTANEOUS EMPHYSEMA DURING PARTURITION.—Dr. Peper narrates the case of a woman, æt. 24, primapara, who had a prolonged labor, which had to be terminated by forceps (*Le Praticien*, February 9). During the operation there was produced a swelling of the skin above the right clavicle, increasing with each effort. The swelling extended to the neck, to the face, and to the upper part of the thorax, and there was manifest crepitation. The respiration was more feeble in the right than in the left lung. Resolution of the emphysema occurred in twelve days. The author explains it by supposing that there was rupture of some of the pulmonary vessels, and passage of the air by the bronchi into the mediastinum and subcutaneous cellular tissue. —*Medical Press and Circular.*

BELLADONNA IN URTICARIA.—Dr. L. C. Smith gives a full emetic dose of ipecac, and, after it has acted thoroughly, gives fluid extract of belladonna, in small doses, every two hours, until its characteristic flush of the skin is produced on the face, or until vision is considerably disturbed. This degree of impression should be maintained, gradually diminishing the dose, for two or three days.—*Pacific Medical and Surgical Journal*, December, 1879.

THE PHARMACEUTICAL PREPARATIONS OF PICROTOXIN.—In a recent article by Dr. Murrell, on the administration of picrotoxin in night-sweating, etc., the statement was made that this substance is soluble in cold water in the proportion of 1 part to 180. Mr. Martindale now writes to the *British Medical Journal* (February 28), to say that he has found picrotoxin insoluble in the cold over 1 part to 480. He suggests the following as a practicable formula:

℞ Picrotoxin, gr. viij;
Acid. acetic. glacial., ʒiv;
Aquæ destillat., ad ℥iv.

Misce et cola.

Unless filtered, a little flocculent sediment forms in the solution, probably due to some impurity in the picrotoxin. Dr. Murrell finds this solution quite as active as the simple aqueous solution in checking night-sweating, and it is palatable. Pills containing $\frac{1}{60}$ grain, the average dose, may readily be made by triturating with a little sugar of milk and adding a minute quantity of glycerin or tragacanth. Dr. Murrell recommends a dose equal to $\frac{1}{60}$ grain three times a day, the last dose being taken at bedtime, or immediately before the time at which the perspiration usually commences.

A SIMPLE METHOD OF EVACUATING SMALL CALCULI.—Dr. Mercier recently demonstrated before the Société de Médecine of Paris an easy and practical means of getting rid of small vesical calculi. It consists in making the patient lie on his belly; then the calculi fall by their own weight into the anterior part of the bladder. The patient is then allowed to rise slowly on to all-fours. He micturates in this position, and the calculi, which have not yet had time to return into the *cul-de-sac* behind the prostate, are carried away in the stream of urine.—*Medical Press and Circular.*

A NEW SPRING TOURNIQUET.—The *British Medical Journal* of February 21 gives a brief description, with an illustration, of a double cord of thick and strong elastic material, having a buckle at one end and a pad through which the cords run, and which can readily be slid along to any desired point. This instrument controls the circulation completely, and at the same time possesses the advantage that it can be tightened or loosened with a single hand,—an obvious benefit to the country surgeon.

ARSENIC IN UTERINE HEMORRHAGE.—Dr. George S. A. Ranking says that an experience of four years in India has shown him the benefit of arsenic in menorrhagia. This affection is very common among women in India, and seems to bear some direct relation to ague. He thinks that quinine given for the ague brings on menorrhagia. Dr. Ranking gives ten drops of Fowler's solution twice a day, either alone or in combination with a mineral acid, after food.—*Practitioner*, February.

MISCELLANY.

POISONING BY ROBINIA PSEUDACACIA (HONEY-LOCUST).—Dr. Gelcich reports in the *Pacific Medical Journal*, April, 1880, cases of children severely, but not fatally, poisoned by chewing the bark of the above-named tree. The symptoms were sleep, stupor, dilated pupils, staggering, spasmodic muscular movements, drawing of the knees to the chest. The patients also complained of burning in the throat and stomach. The youngest child, a girl of three years, was the worst. She had a mortal pallor, absence of pulse, livid lips, sunken eyes, and complete prostration and insensibility for three hours. Warm stimulants by the mouth and rectum, counter-irritation, strong coffee, smelling-salts, hot frictions, and flagellation brought her finally to life and consciousness.

DEVICE TO INSURE WHOLESOME FOOD.—A Bridgeport Yankee has invented a machine to prevent marketmen from selling stale eggs for fresh. Its success is based upon the fact that whenever a hen lays she kicks backward, when her foot will strike an electric disk, which causes a rubber stamp to print the date on the newly-laid egg. The stamp is altered each day.—*Springfield Republican.*

ENEMA IN INFANTILE CONVULSIONS.—After the bowels have been evacuated by a large enema, simple or oleaginous, the following is to be administered:

℞ Moschæ, gr. iij;
Camphoræ, gr. xv;
Chloral hydrat., gr. ivss;
Vitelli ovi, no. j;
Aquæ, f℥ivss.—M.

SYMPATHETIC NERVOUS COUGH OF PREGNANCY.—

℞ Spiritus ætheris, f℥iij;
Tinct. chloroformi comp., f℥i;
Acidi hydrocyanici, ♏xv;
Liquoris morphiæ sulph., f℥i;
Tinct. cardamom. comp., f℥vi;
Aquæ, ad f℥viij.—M.

A sixth part every six or eight hours.

MODERN HOMŒOPATHY.—According to the *Pacific Medical Journal* (April), the homœopathic physician of the County Hospital at Sacramento has been replaced by a "regular," partly, at least, because of the medicine-bills being so much higher than ever they had been. Quinine pills, as an instance, were bought by the thousand.

CURIOUS EFFECT OF STARVATION.—A correspondent, writing from the famine districts of Ireland, says, "I saw hundreds of children, from the age of two to twelve, with hair on their skinny arms and cheeks fully one inch long,—a false growth caused by decay and hunger."

A DOCTOR at Val de Grâce has just died a victim to his devotion. A patient in the hospital to which the medical man was attached

was on the point of death, and transfusion was proposed as a *dernière ressource*. The doctor in question offered his blood, which, unfortunately for him, was but too readily accepted, for a few days afterwards purulent pleuritis set in and carried him off.

WEAKNESS IS POWER.—We extract the following from "*The Medical Counsellor*,—a monthly journal devoted to the best interests of homœopathy" [italics our own]:

"But to return to Jenichen. 'Finding a bottle of the 29th dilution of Plumb. ac. dried up, the cork loose and dry, the idea occurred to him to potentize from the bottle up to the 200th. A patient affected with *hereditary* fetid perspiration of the feet *smelt once* of a few globules saturated with this potency, and in a few days was permanently cured.—Rentsch.' Dr. Hering, who is the acknowledged authority on this point, confirms this statement of Rentsch."

"WOOD'S LIBRARY OF STANDARD AUTHORS" is certainly a most laudable effort at the diffusion of knowledge among the profession, and we notice that the selection for 1880 is a very good one.

DR. HENRY C. CHAPMAN has been chosen by the trustees of the Jefferson Medical College Professor of the Institutes of Medicine and of Medical Jurisprudence in place of the late Professor James Aitken Meigs.

WE notice that new editions have been published of Dr. William B. Atkinson's "Hints of Obstetric Procedure" and of Prof. Flint's "Manual of Auscultation and Percussion."

ACCORDING to the Cincinnati *Lancet and Clinic*, the sale of fictitious medical diplomas at twenty-five dollars apiece is still lively in Porkopolis.

NOTES AND QUERIES.

IMPURE BAKING SODA IN THE MARKET.

ANALYTICAL LABORATORY, 45 SOUTH DIAMOND STREET,
ALLEGHENY CITY, PA., April 15, 1880.

EDITOR *Philadelphia Medical Times*:

DEAR SIR,—Bicarbonate of soda, or "baking soda," when pure, is a compound of one equivalent of soda, one of water, and two of carbonic acid. By ignition it is converted into the anhydrous monocarbonate. For three weeks past I have been engaged in analytical work demanding imperatively chemically-pure reagents. I find that the dealers in chemicals mark "C. P." upon the vilest mixtures and compounds. One of the reagents which I required in this instance was pure monocarbonate of soda, and, having found that a sample which I had purchased from a dealer in New York—and which was, as usual, marked "C. P."—was anything but pure, I was compelled to prepare a pure sample for my own use. For this purpose I procured three samples of bicarbonate of soda from three different druggists in this city, with the intention of converting them into the monocarbonate, as above. I found, however, on examination, that every one of the samples contained *alumina*, and was therefore compelled, as already stated, to prepare a pure sample by other methods. I now examined quantitatively one of the samples of so-called pure bicarbonate of soda, and found it to contain .044 per cent. of *pure* alumina. This may look like a small amount of impurity; but .044 per cent. of alumina is equivalent to .387 per cent. of ammonia alum, or to .405 per cent. of potash alum, *i.e.*, in every one hundred grains of this bicarbonate of soda air-dried at common temperature there exists, potentially, about four-tenths or nearly one-half grain of alum. Pure bicarbonate of soda gives a *clear* solution when boiled with distilled water. This kind gives a markedly opalescent solution when boiled with distilled water, which opalescence speedily clears up on supersaturation with pure hydrochloric acid. The alumina was obtained *pure* by a special method.

Many cases of dyspepsia are treated with bicarbonate of soda; but such bicarbonate of soda would rather tend to keep up the disease, for albuminoids form, with soluble salts or compounds of alumina, insoluble albuminates. There are other diseases treated with bicarbonate of soda, but to these I shall not refer.

Bicarbonate of soda is also used, as every housewife (a class rapidly becoming extinct) knows, for culinary purposes, and such bicarbonate of soda is unfit for such purposes, and may account for some of the so-called alum in bread. This bicarbonate of soda is prepared from cryolite, which is a double fluoride of sodium and aluminum, and, however suitable it may be for the manufacture of glass or soap, it is quite unfit for chemical, medical, or culinary purposes. The continued use of such bicarbonate of soda, either as an antacid in dyspepsia or for bread-making, would result, sooner or later, in the production of alum dyspepsia.

GEORGE HAY, M.D., etc.,
Analyst.

THE following neat and pertinent anonymous note, which, along with an abusive editorial clipped from a "Sunday paper," was sent to the editor of this journal, will serve as a "straw" showing the character of those who deceived the worthy President of the Board of Guardians of the Poor:

"Miserable liar and coward, the women you assail are as pure as your wife; you will have your mouth slapped soon."

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM APRIL 4 TO APRIL 17, 1880.

BY S. O. 74, A. G. O., April 3, 1880, the following changes are made:

ASSISTANT-SURGEON G. P. JAQUETT is relieved from duty in Department of the South, and assigned to temporary duty at David's Island, New York Harbor, relieving Surgeon A. K. Smith.

SURGEON SMITH, when relieved, will report in person to Commanding Officer, Department of Arizona, for duty as Medical Director of that Department, relieving Surgeon J. C. McKee.

SURGEON MCKEE, when relieved, will proceed to New York City, and report arrival to the Surgeon-General.

The following-named officers are relieved from duty in the Departments set opposite their respective names, and will report in person to the President of the Army Medical Examining Board, in New York City, for examination for promotion, and, upon completion of examination, report by letter to the Surgeon-General:

ASST.-SURG.	DANIEL WEISEL,	Department of the	Columbia.
" "	P. F. HARVEY,	"	Dakota.
" "	C. K. WINNE,	"	the Platte.

ASSISTANT-SURGEON V. HAVARD is relieved from duty in Department of the South, and will report to President of Army Medical Examining Board, New York City, for examination for promotion, and, upon completion of examination, in person to Commanding General, Department of Texas, for assignment to duty.

The following-named officers are relieved from duty in the Departments set opposite their respective names, and will proceed to New York City, reporting arrival to the Surgeon-General:

SURGEON	C. E. GODDARD,	Department of	Texas.
ASST.-SURG.	F. MEACHAM,	"	Texas.
" "	J. C. AINSWORTH,	"	Arizona.
" "	C. E. PRICE,	"	California.
" "	M. W. WOOD,	"	the Platte.
" "	W. C. SHANNON,	"	Texas.

ASSISTANT-SURGEON L. S. TESSON is relieved from duty in Department of Dakota, ordered to St. Louis, Mo., and to report arrival to Surgeon-General.

ASSISTANT-SURGEON W. REED is relieved from duty in Department of Arizona, will proceed to Richmond, Va., and report arrival to Surgeon-General.

HORTON, S. M., MAJOR AND SURGEON.—After complying with instructions from these Headquarters of January 28, 1880, to proceed to Fort Douglas, U. T., and report to the Commanding Officer for duty as Post-Surgeon. S. O. 30, Department of the Platte, April 6, 1880.